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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/627,784

07/28/2003

Takeshi Ohi

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05/17/2004

LEYDIG VOIT & MAYER, LTD
700 THIRTEENTH ST. NW
SUITE 300
WASHINGTON, DC 20005-3960

EXAMINER

NGUYEN, HIEP

ART UNIT

PAPER NUMBER

2816

DATE MAILED: 05/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/627,784

Applicant(s)

OHI ET AL.

Examiner

Hiep Nguyen

Art Unit

2816

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All. b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 28072004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Correction and /or clarification is required.

Regarding claim 4, the recitation "... during a transition time period that **begins** at **expiration** of a predetermined time interval after said control means has received a turn-on instruction and **ends before** a control voltage that appears at a control terminal of said power semiconductor device reaches a predetermined voltage value" is indefinite because it is not clear what it is meant by". As understood by the examiner, the detection of the variable amount is performed during the time period t1 wherein switch (11) is turned on (figure 7). The Applicant is requested to explain the meaning of claim 4 and explain the relationship between claim 4 and figure 7.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1-5 and 7 are rejected under 35 U.S.C. 102(b) as anticipated by Kiraly (USPat. 5,467,242).

Regarding claims 1-3, figure 2 of Kiraly shows a drive circuit for driving a power semiconductor device, said circuit comprising:

a control means (60) for controlling switching of the power semiconductor device (50) according to a turn-on instruction or turn-off instruction sent thereto from outside said drive circuit;

a controllable variable value detection means (20) for detecting an amount of variable controlled by said control means and applied to said power semiconductor device during a predetermined time period when said control means receives a turn-on instruction (col. 4, lines 27-31); and

an abnormality detection means (10, 30, 40) for monitoring the controllable variable amount detected by said controllable variable value detection means so as to detect occurrence of an abnormality (short circuit) in said power semiconductor device. The controllable variable value detection means (20) detects an over-current flowing in the control terminal of the power semiconductor device (col. 4, lines 37-40).

Regarding claim 4, the controllable variable value detection means provides a predetermined on-time for the switch during the initial turn-on period.

Regarding claim 5, when the abnormality detection means (10,30) detects occurrence of an abnormality (over-current), said control means causes said power semiconductor device to make a transition to an off state (col. 4, lines 32-51).

Regarding claim 7, figure2 of Kiraly shows a drive circuit for driving a power semiconductor device, said circuit comprising:

a control means (60) for controlling switching of the power semiconductor device according to a turn-on instruction or turn-off instruction sent thereto from outside said drive circuit;

a controllable variable value detection means (20) for detecting an amount of variable controlled by said control means and applied to said power semiconductor device; and an abnormality detection means (10, 30 40) for monitoring the controllable variable amount detected by said controllable variable value detection means so as to detect occurrence of an abnormality (over-current) in said power semiconductor device, and for validating the detection result the occurrence the abnormality only during a predetermined time period after said control means has received a turn-on instruction (col. 4, lines 13-56).

Allowable Subject Matter

Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Claim 6 is objected to because the prior art of record fails to teach or fairly suggest a drive circuit having a control means causes said power semiconductor device to make a transition to an off state at a lower speed than that at which said control means causes said power semiconductor device to make a transition to an off state according to a turn-off instruction.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hiep Nguyen whose telephone number is (571) 272-1752. The examiner can normally be reached on Monday to Friday from 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Callahan can be reached on (571) 272-1740. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hiep Nguyen

05-11-04 



TUANT. LAM
PRIMARY EXAMINER